

State/Industry Ambient Monitoring Network

Air Quality Report

4th Quarter 2004

Prepared By:

Air Quality Monitoring Branch
Division of Air Quality
North Dakota Department of Health

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SECTION ONE

DISCUSSION OF MONITORING RESULTS

Sulfur Dioxide (SO₂)

There were no exceedances of the federal standards during the quarter. There was no exceedance of the State 1-hour standard. The maximum 1-hour concentration was 88 ppb on October 9 at Mandan NW - SPM; the maximum 3-hour concentration was 58 ppb on October 14 at Mandan - SPM; and, the maximum 24-hour concentration was 31 ppb on October 15 at Mandan - SPM. The highest arithmetic mean is 4.6 ppb at Mandan - SPM. All sites achieved at least an 80% data recovery for the period operated.

Sulfur Dioxide (SO₂) 5-Minute Average

The maximum 5-minute concentration was 148 ppb on October 14 at Mandan - SPM. All sites achieved at least an 80% data recovery for the period operated.

Ozone (O₃)

There was no exceedance of the ozone standard during the quarter. The highest observed 1-hour concentration was 49 ppb on October 6 at Beulah - North and Fargo - North. The highest 4th highest 8-hour concentration was 40 ppb on October 9 at Fargo - NW. All sites achieved at least an 80% data recovery for the period operated.

Nitrogen Dioxide (NO₂)

The highest observed 1-hour concentration was 42 ppb on October 11 at Fargo-NW. The maximum arithmetic mean concentration was 6.2 ppb at Fargo NW. All sites achieved at least an 80% data recovery for the period operated.

Ammonia (NH₃)

The highest 1-hour concentration was 94.0 ppb on November 3 at Beulah - North . The site achieved an 80% data recovery for the period.

The data is used as part of the ambient data input used by the newer dispersion models.

Inhalable Continuous PM_{2.5} Particulates

There was no exceedance of the 24-hour standard during the quarter. The highest 1-hour concentration was 68.3 $\mu\text{g}/\text{m}^3$ on October 20 at Beulah - North. The highest 24-hour concentration was 14.9 $\mu\text{g}/\text{m}^3$ on November 17 at Fargo NW. The highest arithmetic mean concentration was 5.2 $\mu\text{g}/\text{m}^3$ at Hannover. All sites achieved at least an 80% data recovery for the period operated.

Inhalable PM_{2.5} Particulates

There was no exceedance of the 24-hour standard during the quarter. The highest 24-hour average concentration was 28.1 $\mu\text{g}/\text{m}^3$ on November 17 at Fargo NW. The highest arithmetic mean was 8.2 $\mu\text{g}/\text{m}^3$ at Fargo NW. All sites achieved at least an 80% data recovery for the period.

Inhalable Continuous PM₁₀ Particulates

There was no exceedance of the 24-hour standard during the quarter. The highest 1-hour concentration was 256.8 $\mu\text{g}/\text{m}^3$ on December 20 at Lostwood NWR. The maximum 24-hour concentration was 61.6 $\mu\text{g}/\text{m}^3$ on October 12 at Fargo NW. The highest arithmetic mean was 19.5 $\mu\text{g}/\text{m}^3$ at Fargo NW. The site achieved an 80% data recovery for the period.

Inhalable PM₁₀ Particulates

There was no exceedance of the 24-hour standard during the quarter. The maximum 24-hour average concentration was 33 $\mu\text{g}/\text{m}^3$ on October 12 at Bismarck Residential. The highest arithmetic mean was 14.7 $\mu\text{g}/\text{m}^3$ at Bismarck Residential. At least an 80% data recovery for the period was achieved.

SECTION TWO

AMBIENT AIR QUALITY DATA

SUMMARIES

COMPARISON OF AIR QUALITY DATA WITH
THE NORTH DAKOTA AMBIENT AIR QUALITY STANDARDS *

POLLUTANT : Sulfur Dioxide (ppb)

LOCATION	YEAR	SAMPLING PERIOD	NUM OBS	1 - HOUR		M A X I M A		24 - HOUR		ARITH MEAN	1HR #>273	24HR #>99	% >MDV
				1ST MM/DD:HH	2ND MM/DD:HH	1ST MM/DD:HH	2ND MM/DD:HH	1ST MM/DD	2ND MM/DD				
Amerada Hess - Tioga #1	2004	OCT-DEC	2189	31 11/02:19	30 11/02:13	24 11/02:14	24 11/02:17	14 11/02	8 11/15	1.7			14.2
Amerada Hess - Tioga #3	2004	OCT-DEC	2185	61 10/14:14	53 11/22:16	41 11/03:17	38 10/14:14	24 12/12	20 12/22	3.4			23.3
Bear Paw - MGP #3	2004	OCT-DEC	2190	10 11/12:10	6 10/12:10	6 11/12:11	3 12/30:20	2 11/12	2 12/30	1.1			3.7
Bear Paw - MGP #5	2004	OCT-DEC	2190	11 10/12:10	6 10/12:11	7 10/12:11	4 11/01:05	2 11/01	2 12/31	1.1			4.9
Beulah - North	2004	OCT-DEC	2193	50 10/04:09	30 10/16:12	30 10/04:11	25 10/16:14	7 10/04	6 12/08	1.6			15.2
DGC #12	2004	OCT-DEC	2195	48 10/16:13	33 10/16:14	31 10/16:14	27 12/08:17	8 12/08	6 12/17	1.7			15.4
DGC #14	2004	OCT-DEC	2192	24 10/20:12	23 10/30:14	15 11/12:14	13 12/11:14	4 12/08	4 10/16	1.6			14.5
DGC #16	2004	OCT-DEC	2193	28 10/20:12	26 10/11:13	21 12/08:17	14 10/20:23	6 12/08	5 10/20	1.4			10.6
DGC #17	2004	OCT-DEC	2188	33 10/16:15	24 10/16:14	20 12/08:17	18 10/16:14	8 10/16	6 12/08	1.4			9.6
Dunn Center	2004	OCT-DEC	2176	16 10/16:11	15 10/16:10	13 10/16:11	8 12/04:17	3 12/04	3 10/16	1.2			9.1
Fargo NW	2004	OCT-DEC	2193	7 10/26:18	6 12/24:10	5 12/24:20	4 12/23:14	2 12/23	2 12/24	1.1			3.7
Hannover	2004	OCT-DEC	2196	56 12/08:10	44 12/08:11	34 12/08:11	27 12/08:17	12 12/08	5 10/20	1.7			21.2
Lostwood NWR	2004	OCT-DEC	2189	36 12/07:09	35 12/07:10	27 12/07:11	18 11/16:17	6 12/07	6 11/16	1.5			14.4
Mandan - SPM	2004	OCT-DEC	2194	76 10/14:13	74 10/15:10	58 10/14:23	54 10/14:14	31 10/15	25 10/14	4.6			47.4

COMPARISON OF AIR QUALITY DATA WITH
THE NORTH DAKOTA AMBIENT AIR QUALITY STANDARDS *

POLLUTANT : Sulfur Dioxide (ppb)

LOCATION	YEAR	SAMPLING PERIOD	NUM OBS	1 - HOUR		M A X I M A		24 - HOUR		ARITH MEAN	1HR #>273	24HR #>99	% >MDV
				1ST	2ND	1ST	2ND	1ST	2ND				
				MM/DD:HH	MM/DD:HH	MM/DD:HH	MM/DD:HH	MM/DD	MM/DD				
Mandan NW - SPM	2004	OCT-DEC	2189	88 10/09:09	76 10/09:08	47 10/09:11	35 10/20:20	13 10/09	11 10/20	3.1			62.2
TRNP - NU	2004	OCT-DEC	2195	13 12/29:20	10 10/16:11	9 12/29:20	7 10/20:14	3 12/29	2 10/16	1.1			5.5
TRNP - SU (Painted Canyon)	2004	OCT-DEC	2195	8 11/12:06	5 12/31:22	4 11/12:08	3 12/31:23	1 11/12	1 12/31	1.0			1.3

The maximum 1-hour concentration is 88 ppb at Mandan NW - SPM on 10/09:09

The maximum 3-hour concentration is 58 ppb at Mandan - SPM on 10/14:23

The maximum 24-hour concentration is 31 ppb at Mandan - SPM on 10/15

The highest arithmetic mean is 4.6 ppb at Mandan - SPM

* The air quality standards are:

STATE Standards -

- 1) 273 ppb maximum 1-hour average concentration.
- 2) 99 ppb maximum 24-hour average concentration.
- 3) 23 ppb maximum annual arithmetic mean concentration.

FEDERAL Standards -

- 1) 500 ppb maximum 3-hour concentration not to be exceeded more than once per year.
- 2) 140 ppb maximum 24-hour concentration not to be exceeded more than once per year.
- 3) 30 ppb annual arithmetic mean.

COMPARISON OF AIR QUALITY DATA WITH
THE NORTH DAKOTA AMBIENT AIR QUALITY STANDARDS *

POLLUTANT : Sulfur Dioxide 5-Minute Averages (ppb)

LOCATION	YEAR	SAMPLING PERIOD	NUM OBS	5 - M I N U T E M A X I M A						# HOURS >600	% >MDV
				1ST	DATE	2ND	DATE	3RD	DATE		
					MM/DD:HH		MM/DD:HH		MM/DD:HH		
Amerada Hess - Tioga #1	2004	OCT-DEC	2189	72	11/02:14	57	11/02:19	56	11/02:18	0	20.7
Amerada Hess - Tioga #3	2004	OCT-DEC	2185	143	10/03:15	121	10/05:16	120	10/14:14	0	36.5
Bear Paw - MGP #3	2004	OCT-DEC	2190	11	11/12:10	9	10/12:10	9	11/12:09	0	18.1
Bear Paw - MGP #5	2004	OCT-DEC	2190	23	10/12:09	21	10/12:10	18	10/09:13	0	15.0
Beulah - North	2004	OCT-DEC	2193	97	10/04:09	66	10/16:12	60	10/20:09	0	23.1
Dunn Center	2004	OCT-DEC	2176	24	10/20:10	22	10/16:10	22	10/16:11	0	15.8
Fargo NW	2004	OCT-DEC	2193	20	10/26:18	16	10/26:09	14	10/26:17	0	8.7
Hannover	2004	OCT-DEC	2196	116	12/08:11	107	10/20:06	105	12/08:10	0	32.0
Lostwood NWR	2004	OCT-DEC	2189	48	10/24:05	45	12/07:10	41	12/07:09	0	20.4
Mandan - SPM	2004	OCT-DEC	2194	148	10/14:13	129	10/14:22	128	10/01:09	0	62.3
Mandan NW - SPM	2004	OCT-DEC	2189	131	10/09:09	126	10/09:08	93	10/20:19	0	74.5
TRNP - NU	2004	OCT-DEC	2195	17	12/29:20	16	10/16:11	16	10/20:12	0	8.7
TRNP - SU (Painted Canyon)	2004	OCT-DEC	2195	12	11/12:06	11	10/05:23	10	11/15:23	0	6.7

The maximum 5-minute concentration is 148 ppb at Mandan - SPM on 10/14:13

* No Standard is currently in effect

COMPARISON OF AIR QUALITY DATA WITH
THE NORTH DAKOTA AMBIENT AIR QUALITY STANDARDS *

POLLUTANT : Ozone (ppb)

LOCATION	YEAR	SAMPLING PERIOD	NUM OBS	1 - HOUR		M A X I M A 8 - HOUR		3RD	4TH	1HR #>120	8HR #>80
				1ST MM/DD	2ND MM/DD	1ST MM/DD	2ND MM/DD				
Beulah - North	2004	OCT-DEC	2196	49 10/06	47 10/09	46 10/06	43 10/09	40 10/11	36 10/10		
Dunn Center	2004	OCT-DEC	2178	47 10/06	42 10/09	41 10/06	33 10/05	29 10/02	27 10/01		
Fargo NW	2004	OCT-DEC	2193	49 10/06	48 10/10	46 10/06	44 10/10	44 10/07	40 10/09		
Hannover	2004	OCT-DEC	2147	40 10/09	40 10/05	38 10/06	36 10/09	35 10/11	33 10/25		
Lostwood NWR	2004	OCT-DEC	2192	48 10/09	47 10/06	45 10/09	39 10/11	37 10/10	37 10/02		
TRNP - NU	2004	OCT-DEC	2197	47 10/09	45 10/06	44 10/09	41 10/08	40 10/06	33 10/01		
TRNP - SU (Painted Canyon)	2004	OCT-DEC	2194	46 10/06	42 10/09	41 10/06	40 10/08	39 10/09	30 10/01		

The maximum 1-hour concentration is 49 ppb at Beulah - North on 10/06
The 4th highest 8-hour concentration is 40 ppb at Fargo NW on 10/09

* The air quality standards for ozone are:

STATE - 120 ppb not to be exceeded more than once per year.

FEDERAL - Fourth highest daily maximum 8-hour averages for a 3-year period not to exceed 80 ppb.

COMPARISON OF AIR QUALITY DATA WITH
THE NORTH DAKOTA AMBIENT AIR QUALITY STANDARDS *

POLLUTANT : Nitrogen Dioxide (ppb)

LOCATION	YEAR	SAMPLING PERIOD	NUM OBS	M A X I M A 1 - HOUR		ARITH MEAN	% >MDV
				1ST MM/DD:HH	2ND MM/DD:HH		
Beulah - North	2004	OCT-DEC	2186	38 10/05:19	21 10/20:04	3.2	99.1
DGC #12	2004	OCT-DEC	2178	26 10/05:20	20 10/28:17	2.9	95.8
DGC #17	2004	OCT-DEC	1953	21 12/08:16	20 12/08:17	2.0	90.6
Dunn Center	2004	OCT-DEC	2169	16 12/08:16	10 12/05:01	1.7	91.7
Fargo NW	2004	OCT-DEC	2080	42 10/11:18	38 12/13:20	6.2	93.9
Hannover	2004	OCT-DEC	2190	18 11/25:16	17 10/26:20	2.3	87.1
Lostwood NWR	2004	OCT-DEC	2183	16 12/07:09	15 11/16:16	2.2	97.3
TRNP - NU	2004	OCT-DEC	2191	14 12/29:20	13 12/29:21	1.7	98.6

The maximum arithmetic mean concentration is 6.2 ppb at Fargo NW

* The air quality standards are:
STATE - 53 ppb maximum annual arithmetic mean.
FEDERAL - 53 ppb annual arithmetic mean.

COMPARISON OF AIR QUALITY DATA WITH
THE NORTH DAKOTA AMBIENT AIR QUALITY STANDARDS *

POLLUTANT : Ammonia (ppb)

LOCATION	YEAR	SAMPLING PERIOD	NUM OBS	M A X I M A 1 - HOUR					
				1ST MM/DD:HH	2ND MM/DD:HH	3RD MM/DD:HH	4TH MM/DD:HH	5TH MM/DD:HH	6TH MM/DD:HH
Beulah - North	2004	OCT-DEC	2179	94.0 11/03:17	87.5 11/25:12	78.3 11/03:16	69.8 12/12:07	67.8 12/13:12	62.4 12/12:16

* No standard is currently in effect.

COMPARISON OF AIR QUALITY DATA WITH
THE NORTH DAKOTA AMBIENT AIR QUALITY STANDARDS *

POLLUTANT : Inhalable Continuous PM_{2.5} Particulates (µg/m³)

LOCATION	YEAR	SAMPLING PERIOD	NUM OBS	1 - HOUR		M A X I M A		24 - HOUR		ARITH MEAN	24HR #>65	AM>15
				1ST MM/DD:HH	2ND MM/DD:HH	1ST MM/DD	2ND MM/DD	3RD MM/DD	4TH MM/DD			
Beulah - North	2004	OCT-DEC	2196	68.3 10/20:03	61.0 10/20:04	13.1 10/20	10.1 12/07	9.8 12/26	9.7 12/27	5.1		
Dunn Center	2004	OCT-DEC	2179	30.0 10/20:08	22.0 12/21:15	7.7 12/30	7.5 12/27	7.3 12/26	5.6 10/20	2.2		
Fargo NW	2004	OCT-DEC	2196	28.9 11/17:18	27.9 11/17:17	14.9 11/17	9.9 10/11	8.8 10/06	8.5 10/12	3.4		
Hannover	2004	OCT-DEC	2106	56.4 12/10:09	40.0 12/10:08	13.6 12/10	10.4 12/06	9.8 11/25	9.2 12/26	5.2		
Lostwood NWR	2004	OCT-DEC	2194	19.2 12/08:09	18.9 10/27:10	10.0 12/08	7.6 12/07	7.5 10/27	7.2 12/26	2.2		
TRNP - NU	2004	OCT-DEC	2197	30.3 12/25:21	21.2 12/05:02	7.1 10/27	6.4 12/27	6.1 12/26	5.8 12/05	2.0		
TRNP - SU (Painted Canyon)	2004	OCT-DEC	2196	28.8 10/12:08	19.1 11/09:22	9.0 10/27	8.5 12/27	8.1 10/12	8.0 10/20	5.0		

The highest 24-hour concentration is 14.9 µg/m³ at Fargo NW on 11/17
The highest Annual Mean concentration is 5.2 µg/m³ at Hannover

* The ambient air quality standards are:

FEDERAL Standards -

- 1) 24-hour: 3-year average of 98th percentiles not to exceed 65 µg/m³.
- 2) Annual: 3-year average not to exceed 15 µg/m³.

COMPARISON OF AIR QUALITY DATA WITH
THE NORTH DAKOTA AMBIENT AIR QUALITY STANDARDS *

POLLUTANT : Inhalable PM_{2.5} Particulates (µg/m³)

LOCATION	YEAR	SAMPLING PERIOD	NUM OBS	MIN	M A X I M A 24 - HOUR			ARITH MEAN	#> 65	AM>15	% >MDV
					1ST MM/DD	2ND MM/DD	3RD MM/DD				
Beulah - North	2004	OCT-DEC	15	1.8	10.8 10/30	9.3 12/29	6.8 10/24	4.9			93.3
Bismarck Residential	2004	OCT-DEC	30	2.7	18.1 12/26	17.9 10/27	12.4 10/24	6.9			100.0
Fargo NW	2004	OCT-DEC	28	2.3	28.1 11/17	20.0 11/26	16.0 12/08	8.2			100.0
TRNP - NU	2004	OCT-DEC	14	2.0	11.2 12/05	8.8 10/18	8.1 12/29	5.1			100.0
TRNP - SU (Painted Canyon)	2004	OCT-DEC	15	1.3	9.0 12/05	8.4 10/06	7.3 10/18	4.7			93.3

The maximum 24-hour concentration is 28.1 µg/m³ at Fargo NW on 11/17
The highest arithmetic mean concentration is 8.2 µg/m³ at Fargo NW

* The ambient air quality standards are:

FEDERAL Standards -

- 1) 24-hour: 3-year average of 98th percentiles not to exceed 65 µg/m³.
- 2) Annual: 3-year average not to exceed 15 µg/m³.

COMPARISON OF AIR QUALITY DATA WITH
THE NORTH DAKOTA AMBIENT AIR QUALITY STANDARDS *

POLLUTANT : Inhalable Continuous PM₁₀ Particulates (µg/m³)

LOCATION	YEAR	SAMPLING PERIOD	NUM OBS	1 - HOUR		M A X I M A		24 - HOUR		ARITH MEAN	24HR #>150	AM>50
				1ST MM/DD:HH	2ND MM/DD:HH	1ST MM/DD	2ND MM/DD	3RD MM/DD	4TH MM/DD			
Dunn Center	2004	OCT-DEC	2179	235.0 12/11:17	174.0 12/17:11	42.9 12/11	42.3 10/14	33.1 12/21	29.0 10/10	12.9		
Fargo NW	2004	OCT-DEC	2195	249.0 11/11:17	191.0 11/23:07	61.6 10/12	54.0 10/11	50.4 11/11	48.7 11/23	19.5		
Lostwood NWR	2004	OCT-DEC	2194	256.8 12/20:15	223.8 12/20:14	51.8 12/20	25.4 10/09	25.2 10/07	20.8 10/06	10.2		
TRNP - NU	2004	OCT-DEC	2197	86.0 12/20:19	84.0 12/20:15	32.2 12/20	19.8 10/14	18.5 10/07	17.9 10/10	9.2		

The highest 24-hour concentration is 61.6 µg/m³ at Fargo NW on 10/12
The highest arithmetic mean concentration is 19.5 µg/m³ at Fargo NW

* The STATE and FEDERAL air quality standards are:

- 1) 150 µg/m³ maximum averaged over a 24-hour period with no more than one expected exceedance per year.
- 2) 50 µg/m³ expected annual arithmetic mean.

COMPARISON OF AIR QUALITY DATA WITH
THE NORTH DAKOTA AMBIENT AIR QUALITY STANDARDS *

POLLUTANT : Inhalable PM₁₀ Particulates (µg/m³)

LOCATION	YEAR	SAMPLING PERIOD	NUM OBS	MIN	M A X I M A			ARITH MEAN	#>150	AM>50	% >MDV
					24 - HOUR						
					1ST MM/DD	2ND MM/DD	3RD MM/DD				
Bismarck Residential	2004	OCT-DEC	15	7.0	33.0 10/12	24.0 11/17	21.0 10/06	14.7			100.0

The maximum 24-hour concentration is 33.0 µg/m³ at Bismarck Residential on 10/12
The highest arithmetic mean concentration is 14.7 µg/m³ at Bismarck Residential

* The STATE and FEDERAL air quality standards are:

- 1) 150 µg/m³ maximum averaged over a 24-hour period with no more than one expected exceedance per year.
- 2) 50 g/m³ expected annual arithmetic mean.

SECTION THREE

EXCEEDANCE LISTINGS

By Site Date Hour

All Units Are in Parts Per Billion Except Wind Direction (Degrees),
Wind Speed (MPH), CO (PPM), and PM_{2.5} and PM₁₀ (µg/m³)

The * Identifies the Exceedances

NONE

By Date Hour Site

All Units Are in Parts Per Billion Except Wind Direction (Degrees),
Wind Speed (MPH), CO (PPM), and PM_{2.5} and PM₁₀ (µg/m³)

The * Identifies the Exceedances

NONE